IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of
Steffen Greiner et al.
Serial No.: 10/549,997
Filed: December 16, 2005

Confirmation No.: 4674
Date: November 29, 2007
Group Art Unit: 1638
Examiner: Brent T. Page

For: **MODIFIED PPASE EXPRESSION IN SUGAR BEET**

VIA EFS-WEB
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE TO RESTRICTION REQUIREMENT

Sir:

In the Office Action mailed with regard to the above-identified application on October 30, 2007, claims 1-31 are subject to various restriction requirements as discussed below.

In particular, in accordance with 37 C.F.R. §1.499 applicants are required to elect a single invention from among claim Groups I-VIII. In response applicants hereby elect, **with traverse,** the claims of Group III, i.e., nos. 1-8, 10-11, 13-15 and 17-23.

Further to the above, the Office Action additionally states (p. 4) that applicants are also required to select a single SEQ ID NO depending on which invention is elected, but may choose no more than one SEQ ID NO: for each transgene and each promoter. The Action states further that, "Applicants must select either SEQ ID NO:4 or SEQ ID NO:5 for the first transgene, SEQ ID NO:1 or SEQ ID NO:2 for the second transgene and/or SEQ ID NO:6 or SEQ ID NO:7 for the promoter sequence." The Office Action then additionally states (p. 5) that the above requirement is not to be construed as a requirement for an election of species since each nucleotide and amino acid sequence is not a member of a single genus of invention, but constitutes an independent and patentably distinct invention. In response, therefore, applicants elect **with traverse,** SEQ ID NO:4 for the first transgene, SEQ ID NO:1 for the second transgene and SEQ ID NO:6 for the promoter.

Bases of Applicants' Traverse of the Restriction Requirements

With all due respect to the Examiner, it appears to the applicants upon their review of the present Office Action that the Examiner appears to have misinterpreted the invention as claimed. An important feature which unites all of applicants' claims is the provision of a transgenic plant wherein a first and a second transgene are co-expressed. As taught in the present application, the first transgene is a gene coding for V-PPase activity, whereas the second transgene codes for C-PPase activity. Thus, the co-expression of two different genes which are unrelated in structure and localization, surprisingly leads to the production of a synergistic effect, i.e., an unexpected improvement in sugar accumulation in the transgenic sugar beet plant. That is, both a cytosolic PPASE ("C-PPASE") and a vacuolar PPASE ("V-PPASE") act synergistically in lowering cytosolic pyrophosphate (PPi) levels, thereby promoting anabolic metabolism, including meristematic activity. It has been surprisingly discovered, therefore, by the applicants that only the combination of both enzymes, i.e., C-PPASE and V-PPASE assures a broad down-regulation of cellular PPi concentration in most stages of plant development. This, thus, is the single general inventive concept underlying all of applicants' claims.

On p. 3 of the Office Action, the Examiner cites to an article by Kim et al. as reporting the isolation and characterization of cDNAs encoding beta vulgaris vacuolar pyrophosphatases. He argues that the subject disclosure constitutes the technical feature which relate Groups I - VIII into which Examiner has broken up the claims of this application. Applicants note, however, that the Kim et al. article does not relate to transgenic cells or plants, which are the subject of the presently claimed invention. Kim et al. includes no teaching regarding the production of transgenic cells or even transgenic sugar beet plants. The reference simply characterizes the genes coding for V-PPase (BVP1 and BVP2) in Beta vulgaris. There is no hint or cross-reference to cytosolic PPase activity. This clearly demonstrates that as of the time the reference was published, the skilled worker in this field had not considered the effects of combining vacuolar PPase and cytosolic PPase activity, i.e., the feature upon which the present claims are based. In sum, therefore, the Examiner has not clearly identified the appropriate technical feature relating applicants' claims, nor has he identified a reference which discloses, or even suggests this feature. Applicants, therefore, submit that as the general inventive concept is not disclosed

or suggested in the prior art, the claims of the application should all be considered together in the present application. It is not believed, therefore, that such a search would create an undue burden for the Examiner.

The Examiner has also, as noted above, required applicants to select a single Sequence ID NO for each transgene and promoter. This requirement is traversed as well. Regarding the sequence for the transgenes, it must be noted that SEQ ID NO:1 and SEQ ID NO;2 refer to the same transgene, i.e., wherein SEQ ID NO:1 is the nucleotide sequence and SEQ ID NO:2 is the amino acid sequence that is encoded by the nucleotide sequence of SEQ ID NO:1. The statement in the Office Action to the effect that, "Applicants are reminded that nucleotide sequences encoding a different protein are structurally distinct chemical compounds and are unrelated to one another. These sequences are thus deemed to normally constitute independent and distinct inventions . . ." is, thus, in clear contrast with the situation as explained above. That is, SEQ ID NO:1 and SEQ ID NO:2 relate to the same nucleotide sequences, and the same protein, and thus they are structurally indistinct compounds. Furthermore, the same situation applies with regard to SEQ ID NO:4 and SEQ ID NO:5.

Regarding SEQ ID NO:6 and SEQ ID NO:7, applicants respectfully submit that both sequences encode an optional promoter sequence. That is, the promoters are optional to the invention and are in the alternative. Thus, the promoter sequences do not form part of the "single general inventive concept" alleged by the Examiner and, as such, they should not be subject to a restriction requirement.

Moreover, the same point applies to the feature as to where the first and second transgenes are located, i.e., either on different vectors or on the same vector (see, e.g., the Office Action at p. 3, last paragraph). This feature also does not form part of the "single general inventive concept" and, as such, it also should not be subject to a restriction requirement.

Based on the reasons presented above, therefore, the Examiner is respectfully requested to reconsider and withdraw the various restriction requirements set forth in the Office Action dated October 30, 2007 and, thus, to examine together all of the claims presently pending in this application.

CONTINGENT EXTENSION REQUEST

If this communication is filed after the shortened statutory time period had elapsed and no separate Petition is enclosed, the Commissioner of Patents and Trademarks is petitioned, under 37 C.F.R. § 1.136(a), to extend the time for filing a response to the outstanding Office Action by the number of months which will avoid abandonment under 37 C.F.R. § 1.135. The fee under 37 C.F.R. § 1.17 should be charged to our Deposit Account No. 15-0700.

Respectfully submitted,

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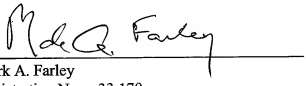

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